

## CLAIMS

What is claimed is:

1           1.     A rubber cylinder sleeve for an offset printing press, the rubber cylinder  
2 sleeve comprising:  
3                 an inner carrier sleeve (2) having a circumferential and an axial direction,  
4 the carrier expandable outwardly by an application of compressed air from the interior;  
5 and  
6                 a single rubber layer (3) having an inner surface disposed on the inner  
7 carrier sleeve (2) and an outer surface (7) for contacting a printing plate; the single  
8 rubber layer (3) including  
9                 a plurality of compressible elements (8) for increasing the relative  
10 compressibility K of the single rubber layer (3), and  
11                 a plurality of filaments (9) for increasing the stiffness S of the single rubber  
12 layer (3),  
13                 the compressible elements (8) and the filaments (9) disposed distal from  
14 the outer surface (7).

1           2. The rubber cylinder sleeve for an offset printing press of claim 1,  
2                 wherein the single rubber layer (3) has a thickness and a length  
3 perpendicular to the thickness, and  
4                 wherein the compressible elements (8) are disposed uniformly in the  
5 length and thickness of the single rubber layer (3) so that the relative compressibility K

6 of the single rubber layer (3) is equivalent through the thickness, the compressible  
7 elements (8) disposed in the axial direction of the inner carrier sleeve (2).

1 3. The rubber cylinder sleeve for an offset printing press of claim 1,  
2 wherein the single rubber layer (3) has a radial thickness and an inner and  
3 an outer arcuate length, and  
4 wherein the compressible elements (8) are disposed uniformly in the radial  
5 thickness of the single rubber layer (3) and varying uniformly from a greater density at  
6 the inner arcuate length to a lesser density at the outer arcuate length so that the  
7 relative compressibility  $K$  of the single rubber layer (3) is equivalent through the radial  
8 thickness, the compressible elements (8) disposed in the axial direction of the inner  
9 carrier sleeve (2).

1 4. The rubber cylinder sleeve for an offset printing press of claim 1;  
2 wherein the single rubber layer (3) includes a thickness and a length  
3 perpendicular to the thickness, and  
4 wherein the filaments (9) are disposed uniformly in the length and  
5 thickness of the single rubber layer (3), the filaments (9) disposed in the circumferential  
6 direction of inner carrier sleeve (2).

1 5. The rubber cylinder sleeve for an offset printing press of claim 1,  
2 wherein the single rubber layer (3) has a radial thickness and an inner and  
3 an outer arcuate length, and

4                wherein filaments (9) are disposed uniformly in the radial thickness of the  
5   single rubber layer (3) and varying uniformly from a greater density at the inner arcuate  
6   length to a lesser density at the outer arcuate length, the filaments (9) disposed in the  
7   circumferential direction of the inner carrier sleeve (2).

1                6. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2   compressible elements (8) are air pockets.

1                7. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2   compressible elements (8) are compressible fibers.

1                8. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2   single rubber layer (3) is endless.

1                9. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2   single rubber layer (3) includes a joint (10).

1                10. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2   single rubber layer (3) includes a gap (11).

1                11. The rubber cylinder sleeve for an offset printing press of claim 1, further  
2   comprising an adhesive bond between the single rubber layer (3) and the inner carrier  
3   sleeve (2).

1                12. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2   single rubber layer (3) is vulcanized to the inner carrier sleeve (2).

1           13. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2           filaments (9) have a length in the range of 10 mm to 30 mm.

1           14. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2           single rubber layer (3) includes a circumferential centerline; and wherein  
3                   the compressible elements (8) are more densely disposed in the single  
4           rubber layer (3) between the centerline and the inner surface than in the single rubber  
5           layer (3) between the centerline and the outer surface (7), and  
6                   a majority of the filaments (9) are more densely disposed in the single  
7           rubber layer (3) between the centerline and the outer surface (7) than in the single  
8           rubber layer (3) between the centerline and the inner surface.

1           15. The rubber cylinder sleeve for an offset printing press of claim 1, wherein the  
2           compressible elements (8) are disposed in the single rubber layer (3) so that the relative  
3           compressibility  $K$  of the single rubber layer (3) increases continuously from the outer  
4           surface (7) to the inner surface, and the filaments (9) are disposed in the single rubber  
5           layer (3) so that the stiffness  $S$  of the single rubber layer (3) increases continuously from  
6           the inner surface to the outer surface (7).

1           16. A single rubber layer for transferring an image in a printing press, the  
2           single rubber layer comprising:  
3                   an inner surface for contacting a carrier sleeve;  
4                   an outer surface (7) for contacting a printing plate;

5                   a compressible element (8) for increasing the relative compressibility K of  
6 the rubber layer; and  
7                   a filament (9) for increasing the stiffness S of the single rubber layer;  
8                   the compressible element (8) and the filament (9) disposed distal from the  
9 outer surface.

1                   17. The single rubber layer for transferring an image in a printing press of  
2 claim 16, wherein the single rubber layer (3) includes a circumferential centerline, and  
3 wherein the compressible elements (8) are more densely disposed in the single rubber  
4 layer (3) between the centerline and the inner surface than in the single rubber layer (3)  
5 between the centerline and outer surface (7) and a majority of the filaments (9) are  
6 more densely disposed in the single rubber layer (3) between the centerline and outer  
7 surface (7) than in the single rubber layer (3) between the centerline and the inner  
8 surface.

1                   18. A printing cylinder assembly for an offset printing press, the printing  
2 cylinder assembly comprising:  
3                   a printing unit cylinder (5) including a passage for compressed air from the  
4 interior of the cylinder to the exterior;  
5                   an inner carrier sleeve (2) having a circumferential and an axial direction,  
6 the carrier expandable outwardly by an application of compressed air from the printing  
7 unit cylinder (5), the inner carrier sleeve (2) for fitting over the printing unit cylinder (5);  
8 and

9                   a single rubber layer (3) having an inner surface disposed on the inner  
10 carrier sleeve (2) and an outer surface (7) for contacting a printing plate, the single  
11 rubber layer (3) including  
12                   a plurality of compressible elements (8) for increasing the relative  
13 compressibility K of the rubber layer, and  
14                   a plurality of filaments (9) for increasing the stiffness S of the rubber layer,  
15                   the compressible elements (8) and the filaments (9) disposed distal from  
16 the outer surface (7).